



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/595,706	12/29/2006	Runo Nielsen	742111-173	5078

25570 7590 05/18/2009
ROBERTS MLOTKOWSKI SAFRAN & COLE, P.C.
Intellectual Property Department
P.O. Box 10064
MCLEAN, VA 22102-8064

EXAMINER

BEHM, HARRY RAYMOND

ART UNIT	PAPER NUMBER
----------	--------------

2838

NOTIFICATION DATE	DELIVERY MODE
-------------------	---------------

05/18/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

lgallaugh@rmsclaw.com
dbeltran@rmsclaw.com
bdiaz@rmsclaw.com

Office Action Summary	Application No. 10/595,706	Applicant(s) NIELSEN ET AL.	
	Examiner HARRY BEHM	Art Unit 2838	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 March 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 5 is/are rejected.
- 7) ☒ Claim(s) 2-4 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments with respect to the amended claims 1-5 have been considered but are moot in view of the new ground(s) of rejection.

Examiner notes Applicant's arguments filed 3/5/09 have been fully considered but they are not persuasive. Applicant argues Scheel does not disclose wherein the second feedback circuit transmits the feedback signal depending on an actual change of charge of the first capacitor. However, Scheel senses the current through the first capacitor which depends on an actual change of charge in the first capacitor. In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., with a pulse-width modulation there is no influence of an oscillating frequency) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Interpretation

Examiner notes the preamble of Claim 5 has not been given full patentable weight. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US 6,396,716) in view of Lauter (US 6,046,914).

With respect to Claim 1, Liu discloses an apparatus for converting power from a power input to an output power supply, the apparatus comprising:

a resonance converter (Fig. 4), the resonance converter comprising at least two serial coupled semiconductor switches (Fig. 4 412,414), wherein the semiconductor switches comprise at least one common output terminal (Fig. 4 426), the one common output terminal is connected to at least one first coil (Fig. 4 N1), the first coil is connected to a first capacitor (Fig. 4 400), the first coil is part of a transformer (Fig. 4 428), the transformer comprises a second coil (Fig. 4 N2) connected to rectifier means (Fig. 4 444,446), the rectifier means has its output connected to an output terminal (Fig. 4 420) and an output filter (Fig. 4 434,436), a first feedback circuit (Fig. 4 Feedback network) connects one of the output terminals to an error amplifier (Fig. 4 404), the error amplifier is connected to a first input (Fig. 4 node 408-404) of a control circuit (Fig. 4 410), the control circuit comprises an output (Fig. 4 d) that is connected over driver means to an input of the semiconductor switches, a second feedback circuit (Fig. 4 438-442) transmits a feedback signal (Fig. 4 controls 438) from the first capacitor (Fig. 4

Art Unit: 2838

400), the first capacitor (Fig. 4 400) is serially connected to the first coil (Fig. 4 N1) and to ground (Fig. 4 424), the second feedback circuit is connected to a second input terminal (Fig. 4 node 408, 438) of the control circuit, the second input terminal is connected to at least one second capacitor (Fig. 4 440), the second capacitor (Fig. 4 440) controls a switching frequency of the semiconductor switches, the second feedback circuit transmits the feedback signal (Fig. 4 controls 438) depending on an actual change of charge [voltage depends on a change of charge] of the first capacitor (Fig. 4 400) in each half period of switching of the first capacitor, and the feedback signal linearizes (Fig. 7) the influence of the first feedback circuit. Liu does not disclose wherein the output rectifiers (Fig. 4 444,446) are directly connected to the output terminal (Fig. 4 418).

Lauter discloses an apparatus for converting power wherein the output rectifier (Fig. 1 6) is connected to the output terminal (Fig. 4 Uout). It would have been obvious to one of ordinary skill in the art at the time of the invention to implement a bridge output rectifier in which the output rectifiers are connected to the output terminals. The reason for doing so was "The rectified voltage generated by the bridge rectifier 6 is applied to a smoothing capacitor arrangement consisting of a smoothing capacitor C3 which is arranged parallel to the output of the AC/DC converter and from which the output voltage Uout is tapped" (Lauter column 3, lines 39-43).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Liu (US 6,396,716) or Duerbaum (US 2003/0043599) in view of Nagahara (US 6,449,172).

With respect to Claim 5, Duerbaum disclose a method comprising the steps of: converting a first feedback signal (Fig. 1 Vo), from a power output, to an input to a switching means (Fig. 1 16), influencing via a second feedback signal (Fig. 1 Smeas) the charging and discharging of at least one second capacitor (Fig. 5 26 capacitor) controlling an oscillating circuit (Fig. 1 M), and with increasing load, changing the mode of operation [switching frequency approaches the resonant frequency as the load increases] into a charge mode control by the second feedback signal (Fig. 1 Smeas), wherein the second feedback signal (Fig. 1 Smeas) is based on an actual charging current [vC based on actual charging current iC] of first serial resonant capacitors (Fig. 1 C) and a change in charge [vC based on the change in charge of C] in each half period of switching on the first serial resonant capacitors.

Liu also discloses converting a first feedback signal (Fig. 4 Vo), from a power output, via a feedback network (Fig. 4 Feedback network,404,406) to an input to a switching means (Fig. 4 410), influencing via a second feedback signal (Fig. 4 controls 438) the charging and discharging of at least one second capacitor (Fig. 4 440) controlling an oscillating circuit (Fig. 4 438-442), and with increasing load (Fig. 4 irectified increasing), changing the mode of operation into a charge mode control by the second feedback signal (Fig. 4 sawtooth), wherein the second feedback signal is based on an actual charging current (Fig. 4 icontrol) of first serial resonant capacitors (Fig. 4

Art Unit: 2838

400) and a change in charge (Fig. 4 voltage 400 depends on a change in charge) in each half period of switching on the first serial resonant capacitors.

Duerbaum or Liu remain silent as to implementing the first feedback signal with an opto-coupler.

Nagahara discloses a method for conversion in which a first feedback signal (Fig. 4 Vb) is fed back through an opto-coupler (Fig. 4 38). It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the first feedback signal through an opto-coupler. The reason for doing so was to isolate the secondary output from the primary side input as was well known at the time of the invention and taught by Nagahara "in order to insulate the primary and secondary sides of the transformer 26" (Nagahara column 1, lines 48-52).

Allowable Subject Matter

Claims 2-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: With respect to Claim 2, the prior art does not disclose or suggest, in combination with the limitations of the base claim and any intervening claims, primarily, wherein a resonance converter, the resonance converter comprising at least two serial coupled semiconductor switches, wherein the semiconductor switches comprise at least one common output terminal, the one common output terminal is connected to at least one first coil, the first coil is connected to a first capacitor, the first coil is part of a

Art Unit: 2838

transformer, the transformer comprises a second coil connected to rectifier means, the rectifier means has its output connected to an output, a first feedback circuit connects one of the output terminals to an error amplifier, the error amplifier is connected to a first input of a control circuit, the control circuit comprises an output that is connected over driver means to an input of the semiconductor switches, a second feedback circuit transmits a feedback signal from the first capacitor, the first capacitor is serially connected to the first coil and to ground, the second feedback circuit is connected to a second input terminal of the control circuit, the second input terminal is connected to at least one second capacitor, the second capacitor controls a switching frequency of the semiconductor switches, the second feedback circuit transmits the feedback signal depending on an actual change of charge [voltage depends on a change of charge] of the first capacitor (Fig. 4 400) in each half period of switching of the first capacitor, and the feedback signal linearizes the influence of the first feedback circuit, and the second feedback circuit is connected to the first capacitor to the first capacitor through a third capacitor, and the third capacitor is connected to a fourth capacitor that is connected to a common ground.

With respect to Claim 3, the prior art does not disclose or suggest, in combination with the limitations of the base claim and any intervening claims, primarily, wherein a resonance converter, the resonance converter comprising at least two serial coupled semiconductor switches, wherein the semiconductor switches comprise at least one common output terminal, the one common output terminal is connected to at least one

Art Unit: 2838

first coil, the first coil is connected to a first capacitor, the first coil is part of a transformer, the transformer comprises a second coil connected to rectifier means, the rectifier means has its output connected to an output, a first feedback circuit connects one of the output terminals to an error amplifier, the error amplifier is connected to a first input of a control circuit, the control circuit comprises an output that is connected over driver means to an input of the semiconductor switches, a second feedback circuit transmits a feedback signal from the first capacitor, the first capacitor is serially connected to the first coil and to ground, the second feedback circuit is connected to a second input terminal of the control circuit, the second input terminal is connected to at least one second capacitor, the second capacitor controls a switching frequency of the semiconductor switches, the second feedback circuit transmits the feedback signal depending on an actual change of charge [voltage depends on a change of charge] of the first capacitor (Fig. 4 400) in each half period of switching of the first capacitor, and the feedback signal linearizes the influence of the first feedback circuit, and the second feedback circuit comprises an inverting amplifier, and an output of the inverting amplifier is connected to the second input terminal through a capacitor of the at least one second capacitor.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HARRY BEHM whose telephone number is (571)272-8929. The examiner can normally be reached on 7:00 am - 3:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Akm E. Ullah can be reached on (571) 272-2361. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2838

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Akm Enayet Ullah/
Supervisory Patent Examiner, Art
Unit 2838

/Harry Behm/
Examiner, Art Unit 2838